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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BIRCH, STEWART, KOLASCH & BIRCH, LLP
P. O. Box 747
Falls Church, VA 22040-0747

EXAMINER	
DUONG, THOI V	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

[redacted]

Office Action Summary	Application No.	Applicant(s)	
	09/750,342	PARK ET AL.	
	Examiner	Art Unit	
	Thoi V Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-13* is/are allowed.

6)☒ Claim(s) *1-4 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment filed March 29, 2004.

Accordingly, claims 1 and 14 were amended, and claim 15 was cancelled. Currently, claims 1-14 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-4 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 3 is objected to because of the following informalities: claim 3 recites the limitation "the gate transmitting wires". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (USPN 6,587,160 B2) in view of Shiba et al. (USPN 5,684,555).

Re claim 1, as shown in Figs. 3 and 33, Lee et al. discloses a liquid crystal display device comprising:

upper and lower substrates 11 and 10 with a liquid crystal layer interposed therebetween (Fig. 33 and col. 15, lines 39-42);

a sealant 90 between the upper and lower substrates in an area near an edge of the upper substrate;

a plurality of source and gate pads 201 and 101 on the lower substrate (TFT substrate);

a plurality of gate and data lines 100 and 200 on the lower substrate 10, each gate line 100 being electrically connected with the corresponding gate pad 101, each data line 200 being electrically connected with the corresponding source pad 201 (Fig. 3);

a gate insulating layer 3 between the gate lines and the data lines (see also Fig. 14); and

a plurality of transmitting wires 110 (111 and 112) on the lower substrate, the transmitting wires being electrically connected with the gate and source pads across the sealant such that wherein the plurality of transmitting wires are formed in a curved-shape along the sealant 90 on the lower substrate from the gate pads to the source pads (see also Fig. 6 and col. 8, lines 17-32).

However, Lee et al. does not disclose a source PCB and a gate PCB electrically connected with a plurality of source pads and a plurality of gate pads and formed along a first side and a second side, respectively, of the lower substrate.

As shown in Figs. 1, 3 and 4, Shiba et al. discloses a source PCB 800 and a gate PCB 900 electrically connected with a plurality of source pads 761-764 (Fig. 3) and a plurality of gate pads (not shown), respectively, the source PCB and the gate PCB being formed along a first longer side 201a and a second shorter side 201c,

respectively, of the lower substrate 200 and outside the area 111 in which a sealant 113 is formed such that the upper substrate 500 is not formed over the source PCB or the gate PCB (Fig. 1),

wherein the source PCB and the gate PCB are electrically connected to a counter electrode 541 via a power supply pads 731-738, wherein the power supply pad 734 is arranged in the vicinity of the corner of with in the vicinity of the corner of the lower substrate 200 (Figs. 1 and 4 and col. 6, lines 43-46).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Lee et al. with the teaching of Shiba et al. by forming a source PCB and a gate PCB, which are electrically connected with a plurality of source pads and a plurality of gate pads, along a first side and a second side, respectively, of the lower substrate so as to obtain an LCD panel having an outside dimension small relative to the display area (col. 7, lines 1-18).

Re claim 2, the liquid crystal display of Lee et al. further comprises a plurality of switching devices TFT (Fig. 3).

Re claim 3, Lee et al. discloses only two gate transmitting wires; however, it is obvious that the transmitting wires may include at least eight electrical wires so as to obtain optimum results in extinguishing the electrostatic charges (col. 8, lines 25-32).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (USPN 6,587,160 B2) in view of Shiba et al. (USPN 5,684,555) as applied to claims 1 and 2 above and further in view of Kuwashiro (USPN 5,945,984).

Lee et al. as modified in view of Shiba et al. discloses a LCD device that is basically the same as that recited in claim 4 except for a plurality of dummy pads between the adjacent gate pads and between the adjacent source pads. As shown in Fig. 3, Kuwashiro discloses a LCD device in which dummy pads 731-1, 731-2 are disposed between data pads 721 for inspecting and repairing the display. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD device of Zhang with the teaching of Kuwashiro by forming a plurality of dummy pads between the adjacent gate pads and between the adjacent source pads so as to easily perform an inspection and repair the display (col. 3, line 58 through col. 4, line 3).

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang (USPN 5,995,189) in view of Lee et al. (USPN 6,587,160 B2) and Noritake et al. (USPN 6,400,438 B1).

As shown in Figs. 1-6, Zhang discloses a method of fabricating a liquid crystal display device, the method comprising:

preparing first and second substrates;

forming a plurality of gate lines 106, gate pads (in scanning line drive circuit 104, gate transmitting lines 109 and dummy patterns 301 on the first substrate 201 (col. 6, lines 63-67, col. 7, lines 1-6, and col. 10, line 64 through col. 11, line 4);

forming a gate insulating layer 220 on the gate lines, gate pads, gate transmitting wires, and dummy patterns;

forming a plurality of data lines 105 and data pads (in signal line drive circuit 103), on the gate insulating layer;

forming a passivation layer 227 on the data lines and the data pads;

forming a sealant 107 on the first substrate (col. 11, lines 49-59), wherein the gate transmitting wires 109 connect the gate pads 104 to the source pads 103 across the sealant 107 via an external terminal 108 in the vicinity of a corner of the first substrate 101 as shown in Fig. 1 (col. 6, lines 51-59);

attaching the first and second substrates and forming a liquid crystal layer between the first and second substrates (col. 6, lines 44-50).

Zhang discloses a method of fabricating a liquid crystal display device that is basically the same as that recited in claim 14 except for forming the gate transmitting wires in a curved shape on the lower substrate from the gate pads to the source pads and scribing and breaking the second substrate.

As shown in Fig. 3, Lee et al. discloses gate transmitting wires 110 on the lower substrate, the transmitting wires being electrically connected with the gate and source pads 101 and 201 across a sealant 90, wherein the gate transmitting wires 110 are formed in a curved-shape along the sealant 90 on the lower substrate from the gate pads to the source pads (see also Fig. 6 and col. 8, lines 17-32). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Zhang with the teaching of Lee et al. by forming the gate transmitting wires in a curved shape along the sealant (R2, R3 and R4 sides of Fig. 1)

on the lower substrate from the gate pads to the source pads so as to prevent electrostatic charges from entering into the substrate (col. 2, lines 32-35).

Further, as shown in Fig. 5(a), Noritake discloses that insulator substrates 12a-12d are cut away by means of scribing and breaking a mother glass board 31 along the dotted line in Fig. 5(a) wherein the edges of the contact portions 22 of an opposite electrode 17 (Fig. 6) do not extend beyond or to the borders of the substrates 12a-12d and each separated substrate 12 is used to fabricate a LCD as shown in Fig. 6 (col. 3, lines 62-67 and col. 4, lines 1-8). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of fabricating a LCD device of Zhang with the teaching of Noritake by scribing and breaking the second substrate so as to create separated liquid crystal panels without contaminants and hence improve reliability of the display (col. 4, lines 14-17).

Allowable Subject Matter

8. Claims 5-13 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claim 5, none of the prior art of record discloses, in combination with other limitations as claimed, a repair wire crossing with each gate transmitting wire with the gate insulating layer interposed between the repair wire and the gate transmitting wire.

Re claim 10, none of the prior art of record discloses, in combination with other limitations as claimed, *first and second repair wires, the first repair wire crossing with each of the source pads with the gate insulating layer interposed therebetween, the*

second repair wire crossing with each of the gate pads with the gate insulating layer interposed therebetween;

Re claim 12, none of the prior art of record discloses, in combination with other limitations as claimed, *first and second dummy patterns on the lower substrate, the first dummy pattern being positioned along a first edge of the upper substrate, the second dummy pattern being positioned along a second edge of the upper substrate, the each dummy pattern having at least the same height as the gate transmitting wire.*

The most revelant references, USPN 5,684,555 of Shiba et al. and USPN 5,995,189 of Zhang, fail to disclose or suggest a liquid crystal display comprising a source PCB and a gate PCB electrically connected with the plurality of source pads and the plurality of gate pads, respectively, the source PCB and the gate PCB being formed outside the area in which the sealant is formed such that the upper substrate is not formed over the source PCB or the gate PCB; a plurality of transmitting wires being electrically connected with the gate and source pads across the sealant such that the source PCB is electrical connected with the gate PCB; a repair wire crossing with each gate transmitting wire with the gate insulating layer interposed between the repair wire and the gate transmitting wire; and first and second dummy patterns on the lower substrate, wherein each dummy pattern has at least the same height as the gate transmitting wire. The Shiba's reference only discloses a liquid crystal display device comprising a source PCB and a gate PCB electrically connected with the plurality of source pads and the plurality of gate pads, respectively, the source PCB and the gate PCB being formed outside the area in which the sealant is formed such that the upper

substrate is not formed over the source PCB or the gate PCB, and a plurality of transmitting wires being electrically connected with the gate and source pads across the sealant such that the source PCB is electrical connected with the gate PCB. Meanwhile, the Zhang's reference discloses a repair wire crossing with each gate transmitting wire with the gate insulating layer interposed between the repair wire and the gate transmitting wire, and first and second dummy patterns on the lower substrate, wherein each dummy pattern has at least the same height as the gate transmitting wire; however, the source PCB and the gate PCB are formed inside the area in which the sealant is formed.

Re claims 6 and 9, none of the prior art of record discloses, in combination with other limitations as claimed, *a repair wire with a specific resistance of 10 micro-ohm/cm including first and second closed roofs, the first closed roof being formed along first edge of the upper substrate, the second closed roof being formed along second edge of the upper substrate.*

The most revelant reference, USPN 5,995,189 of Zhang, fails to disclose or suggest that repair wire with closed roofs formed along the first and second edges of the upper substrate. The Zhang's reference reference only discloses a repair wiring pattern without closed roofs formed across the sealant on the lower substrate.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong

06/19/2004

TARIFUR R. CHOWDHURY
PRIMARY EXAMINER